

## **Reliability of Low Glass Transition Temperature PEM's.**

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Microcircuit manufacturers of Plastic Encapsulated Microcircuits (PEM's) are continually changing their materials and processes. Changes in epoxy molding compound materials and chemistry have resulted in recent years in some PEM's with lower Glass Transition Temperature (Tg). Many PEM users in harsh environments have concerns when either the part in its application, or in evaluation or assembly, is used close to, or above, the Tg.

JPL is investigating these reliability concerns. Issues and concerns will be presented in context of application of these parts in Space environments.

Various Tg measurement techniques will be discussed and test results from one of them will be presented on a variety of commonly available PEM's.

Reliability test results of sample low Tg PEM's will be presented. The experiments include burn-in and short life testing under different temperatures. Different low temperature Tg microcircuits are being tested. Assessment of final electrical test measurements and yield will be presented. Failure analysis results may also be provided if available.